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PENSOFT

Panstrongylus geniculatus (Latreille, 1811) (Hemiptera, Reduviidae, Triatominae): first record on Ilha Grande, Rio de Janeiro, Brazil

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Abstract
Panstrongylus geniculatus (Latreille, 1811) is the most widely distributed species in Brazil. This study presents the first report of this species collected inside a building in the "Centro de Estudos Ambientais e Desenvolvimento Sustentável", at the Vila Dois Rios, Ilha Grande, Rio de Janeiro, Brazil. The new record is important to understand the risk of Chagas disease transmission, mainly because this species is commonly found infected with *Trypanosoma cruzi* (Chagas, 1909).

Keywords
Chagas disease, Ilha Grande, new records, *Trypanosoma cruzi*, vector.

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Introduction

The blood-sucking insects of the subfamily Triatominae (Hemiptera, Heteroptera, Reduviidae) are vectors of Chagas disease, an infection caused by the flagellate protozoan *Trypanosoma cruzi* (Chagas, 1909). The subfamily is composed of 151 extant and three fossil species assigned to five tribes and 19 genera (Rosa et al. 2017; Dorn et al. 2018; Lima Cordon et al. 2019; Poinar-Jr 2019). The genus *Panstrongylus* Berg, 1879 was described, based on *P. guentheri* Berg, 1879, and has 15 species, nine of them recorded in Brazil (Galvão 2014). *Panstrongylus* is one of the most important genera for public health, because some species are associated with the transmission of *T. cruzi* to humans and other mammals (Santos et al. 2003; Patterson et al. 2009).

Panstrongylus geniculatus (Latreille, 1811) is a wild species, often associated with armadillos, and eventually found in human dwellings. Valente et al. (1998) reported the colonization of pigsties near to human dwellings in the Amazon River floodplain, municipality of Muaná, Marajó Island, Pará state, northern Brazil. Intra-domiciliary colonies were also reported from Venezuela (Reyes-Lugo 2009; Reyes-Lugo and Rodriguez-Acosta 2000). This species is widely distributed across South America and has been previously record in many states from Brazil: Acre, Amapá, Amazonas, Bahia, Ceará, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rondônia, Roraima,

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São Paulo, and Tocantins (Leite et al. 2007; Silva et al. 2016). The species has already been reported in large urban centers as the city of São Paulo, Brazil (Cerretti-Junior et al. 2018). Here, we report the first record on Ilha Grande, Rio de Janeiro, Brazil and extend the geographical distribution of this species.

Methods

Ilha Grande (23°08′26″S, 044°14′50″W) is an island in the southeastern Brazil, in the state of Rio de Janeiro, 6 km offshore. The island is covered by Atlantic Forest and crossed by winding trails. There are three protected areas in the island: the State Park of Ilha Grande, the State Biological Reserve of Praia do Sul, and the Marine State Park of Aventureiro. Although the entire island (19,300 ha) is an officially declared protected area, several touristic activities are allowed (Fig.1).

On 3 November 2019 one specimen of a triatomine (Figs 2, 3) was collected by manual capture in the lobby of the "Centro de Estudos Ambientais e Desenvolvimento Sustentável" (CEADS) building, Universidade Estadual do Rio de Janeiro (UERJ), which is located in Vila Dois Rios, Ilha Grande, Rio de Janeiro, Brazil (Figs 1, 4). The specimen was sent to the Laboratório Nacional e Internacional de Referência em Taxonomia de Triatomíneos at Oswaldo Cruz Institute, Oswaldo Cruz Foundation (Fiocruz), Rio de Janeiro. The specimen was morphologically identified using the dichotomous keys by Galvão (2014) and deposited in the Triatominae Collection at the Oswaldo Cruz Institute (CTIOC).

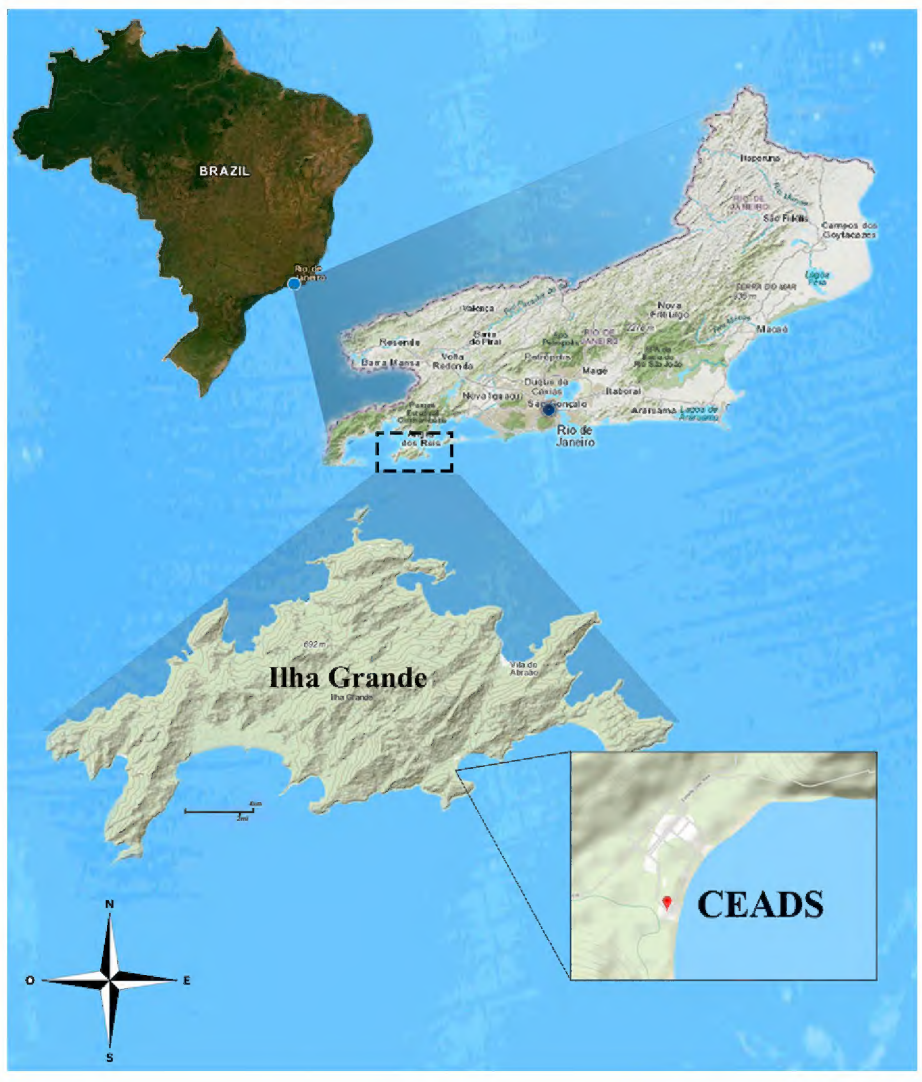

Figure 1. Map showing the location of "Centro de Estudos Ambientais e Desenvolvimento Sustentável (CEADS)", Vila Dois Rios, Ilha Grande, Rio de Janeiro state, Brazil.

Results

***Panstrongylus geniculatus* (Latreille, 1811)**
Figures 2, 3, 5

New record. BRAZIL • 1 ♂; Rio de Janeiro: Angra dos Reis, Ilha Grande, Dois Rios; 23°10′46″S, 044°11′35″W; 2 Nov. 2019; coll. by Solange Ribeiro Peixoto; CTIOC 12434.

Identification. For identification of the genus *Panstrongylus* the main criterion is the position of the antennae, inserted close to the eyes (Fig. 2). The diagnosis of the species is based on: posterior lobe of pronotum with black band along posterior margin except at humeral area; pronotum with humeral angles rounded and femora black with apex reddish; dark spots on the abdominal venter (Fig. 3).

Discussion

In Brazil, *P. geniculatus* was recorded in the states of Acre, Amapá, Amazonas, Bahia, Ceará, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rondônia, Roraima, São Paulo, and Tocantins. This species is frequently collected in artificial habitats, but the sylvatic habitats, aspects of its biology, ecology, and genetics remain unknown (Galvão 2014; Silva et al. 2016).

Two of us (CD and CG) previously received a photo-

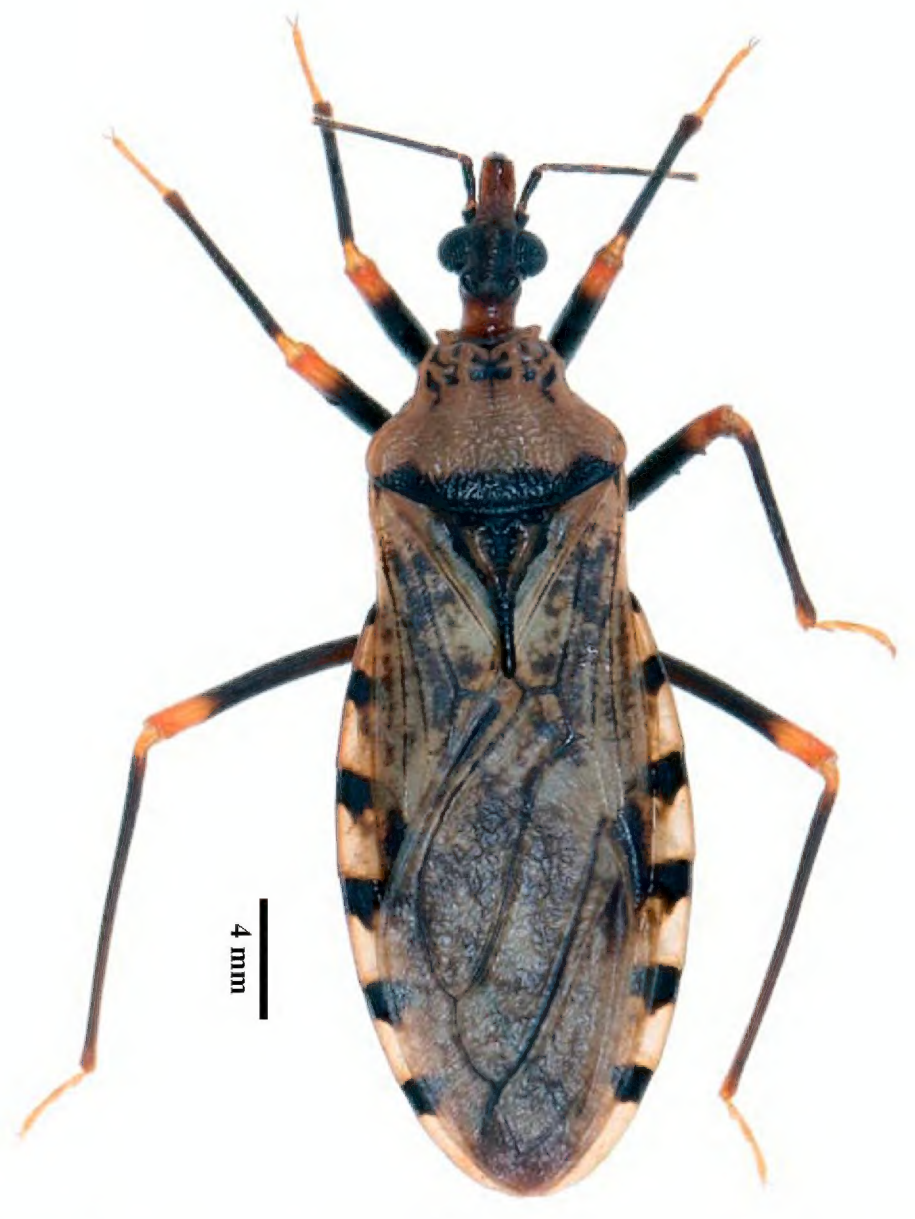

Figure 2. *Panstrongylus geniculatus* (Latreille, 1811), male, dorsal view.

Figure 3. *Panstrongylus geniculatus* (Latreille, 1811), male. A. Dorsal view. B. Ventral view. C. Lateral view.

Figure 4. The "Centro de Estudos Ambientais e Desenvolvimento Sustentável (CEADS)" building, Vila Dois Rios, Ilha Grande, Rio de Janeiro state, Brazil.

graphic record of a male of this species from Ilha Grande, photographed on 27 July 2018 (Fig. 5). This specimen was found alive in a hotel located in Praia de Passaterra, Enseada do Sítio Forte. Unfortunately, the specimen was not captured (Rafi ur Rahman 2018 pers. comm.).

The extension of the geographical distribution of *P. geniculatus* to Ilha Grande, Rio de Janeiro is consistent with the geographic distribution map published by Leite et al. (2007) and the prediction map for the potential distribution of this species in Brazil presented by Gurgel-Gonçalves et al. (2012) and Galvão (2014). The occurrence of sylvatic species, like *P. geniculatus*, invading sporadically human dwellings, was noted by Caranha et al. (2011) as a major difficulty for vector surveillance programs. On the other hand, insular records of triatomines, although unusual, have already been recorded in the literature (Sousa et al. 1983; Rebelo et al. 1998; Valente 1999; Sagua Franco et al. 2000; Rosa et al. 2017;). These records show the necessity of entomological surveys of isolated populations on islands.

Figure 5. Photographic record of *Panstrongylus geniculatus* (Latreille, 1811) found alive (July 2018) inside a hotel located in Praia de Passaterra, Enseada do Sítio Forte, Ilha Grande, Brazil. (Photographed by Rafi ur Rahman).

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Authors' Contributions

SRP collected the specimen contributed to the preparation of the manuscript; DSR and CD contributed to the preparation of the manuscript; CG studied the specimen and reviewed whole text.

References

Caranha L, Gurgel-Gonçalves R, Ramalho RD, Galvão C (2011) New records and geographic distribution map of *Triatoma petrocchiae* Pinto and Barreto, 1925 (Hemiptera: Reduviidae: Triatominae). Check List 7 (4): 508–509. http://doi.org/10.15560/7.4.508

Cerreti-Junior W, Vendrami DP, Matos-Junior MO, Rimoldi-Ribeiro A, Alvarez JV, Marques S, Duarte AN, Silva RA, Rosa JA, Marrelli MT(2018) Occurrences of triatomines (Hemiptera: Reduviidae) and first reports of *Panstrongylus geniculatus* in urban environments in the city of Sao Paulo, Brazil. Revista do Instituto de Medicina Tropical de São Paulo 60: e33. https://doi.org/10.1590/s1678-9946201860033

Dorn PL, Justi SA, Dale C, Stevens L, Galvão C, Lima-Cordón R, Monroy C (2018) Description of *Triatoma mopan* sp. n. from a cave in Belize (Hemiptera, Reduviidae, Triatominae). ZooKeys 775: 69–95. https://doi.org/10.3897/zookeys.775.22553

Galvão C (Ed.) (2014) Vetores da doença de Chagas no Brasil. Série Zoologia, Guia e manuais de identificação. Sociedade Brasileira de Zoologia, Curitiba, 289 pp.

Gurgel-Gonçalves R, Galvão C, Costa J, Peterson AT (2012) Geographic distribution of Chagas disease vectors in Brazil based on ecological niche modeling. Journal of Tropical Medicine 2012 (1): 705326. https://doi.org/10.1155/2012/705326

Leite GR, Santos CB, Falqueto A (2007) Insecta, Hemiptera, Reduviidae, *Panstrongylus geniculatus*: Geographic distribution map. Check List 3 (2): 147–152. https://doi.org/10.15560/3.2.147

Lima-Cordón RA, Monroy MC, Stevens L, Rodas A, Rodas GA, Dorn PL, Justi SA (2019) Description of *Triatoma huehuetenanguensis* sp. n., a potential Chagas disease vector (Hemiptera, Reduviidae, Triatominae). ZooKeys 820: 51–70. https://doi.org/10.3897/zookeys.820.27258

Patterson JS, Barbosa SE, Feliciangeli MD (2009) On the genus *Panstrongylus* Berg 1879: evolution, ecology and epidemiological significance. Acta Tropica 110 (2–3): 187–199. https://doi.org/10.1016/j.actatropica.2008.09.008

Ponair-Junior G (2019) A primitive triatomine bug, *Paleotriatoma metaxytaxa* gen. et sp. nov. (Hemiptera: Reduviidae: Triatominae), in mid-Cretaceous amber from northern Myanmar. Cretaceous Research 93: 90–97. https://doi.org/10.1016/j.cretres.2018.09.004

Rebêlo JMM, Barros VLL, Mendes WA (1998) Espécies de Triatominae (Hemiptera: Reduviidae) do Estado do Maranhão, Brasil. Cadernos de. Saúde Pública 14 (1): 187–192.

Reyes-Lugo M (2009) *Panstrongylus geniculatus* (Latreille, 1811) (Hemiptera: Reduviidae: Triatominae), vector de La enfermedad de Chagas en el ambiente domiciliário del centro-norte de Venezuela. Revista Biomédica 20: 180–205.

Reyes-Lugo M, Rodriguez-Acosta A (2000) Domiciliation of the sylvatic Chagas disease vector *Panstrongylus geniculatus* Latreille, 1811 (Triatominae: Reduviidae) in Venezuela. Transactions of the Royal Society of Tropical Medicine and Hygiene 94 (5): 508.

Rosa JA, Souza ES, da Costa Teixeira A, Barbosa RR, de Souza AJ, Belintani T, Nascimento JD, Gil-Santana HR, de Oliveira J (2017). Third record of *Rhodnius amazonicus* and comparative study with *R. pictipes* (Hemiptera, Reduviidae, Triatominae). Acta Tropica 176: 364–372. https://doi.org/10.1016/j.actatropica.2017.09.003

Sagua Franco H, Araya-Rojas J, Gonzales Cortes J, Neira Cortes I (2000) *Mepraia spinolai* in the southeastern Pacific Ocean coast (Chile)—first insular record and feeding pattern on the Pan de Azúcar Island. Memorias do Instituto Oswaldo Cruz 95 (2): 167–170.

Santos CM, Jurberg J, Galvão C, Rocha D, Fernandez JIR (2003) Estudo morfométrico do gênero *Panstrongylus* Berg, 1879 (Hemiptera, Reduviidae, Triatominae). Memórias do Instituto Oswaldo Cruz 98 (7): 939–944.

Silva MBA, Rocha DS, Jurberg J, Silva A, Farias MCG, Galvão C (2016). Registration of new geographical distribution of *Panstrongylus geniculatus* (Latreille) 1811 (Hemiptera, Reduviidae, Triatominae) in Brazil. Revista de Patologia Tropical 45 (3): 323–326.

Sousa O, Wolda H, Batista, F (1983). Triatominos found in Silvestre de la Isla Barro Colorado Revista Médica de Panamá 8: 50–55.

Valente VC (1999) Potential for domestication of *Panstrongylus geniculatus* (Latreille, 1811) (Liemiptera, Reduviidae, Triatominae) in the Municipality of Muaná, Marajó Island, state of Pará, Brazil. Memórias do Instituto Oswaldo Cruz 94 (Suppl. 1): 399–400. https://doi.org/10.1590/S0074-02761999000700078

Valente VC, Valente SAS, Noireau F, Carrasco HJ, Miles MA (1998). Chagas disease in the Amazon Basin: association of *Panstrongylus geniculatus* (Hemiptera: Reduviidae) with domestic pigs. Journal Medical Entomology 35: 99–103.